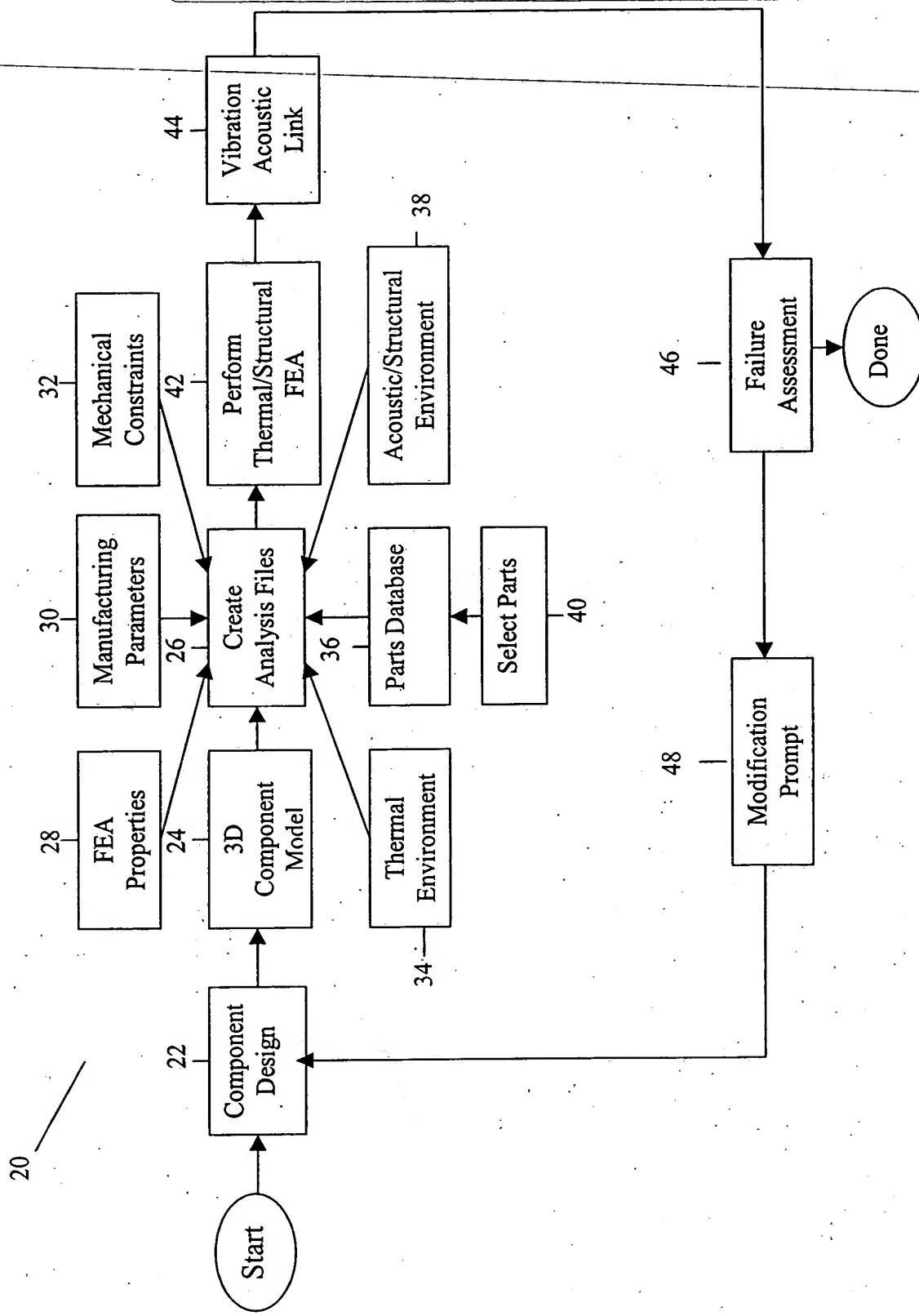


FIG. 1.



Title: *Method, System and Computer Program Product for
Multidisciplinary Design Analysis of Structural Components*
Inventor(s): Mostafa Rassaian
Application No: To be assigned
Atty Dkt No: 38190/235695

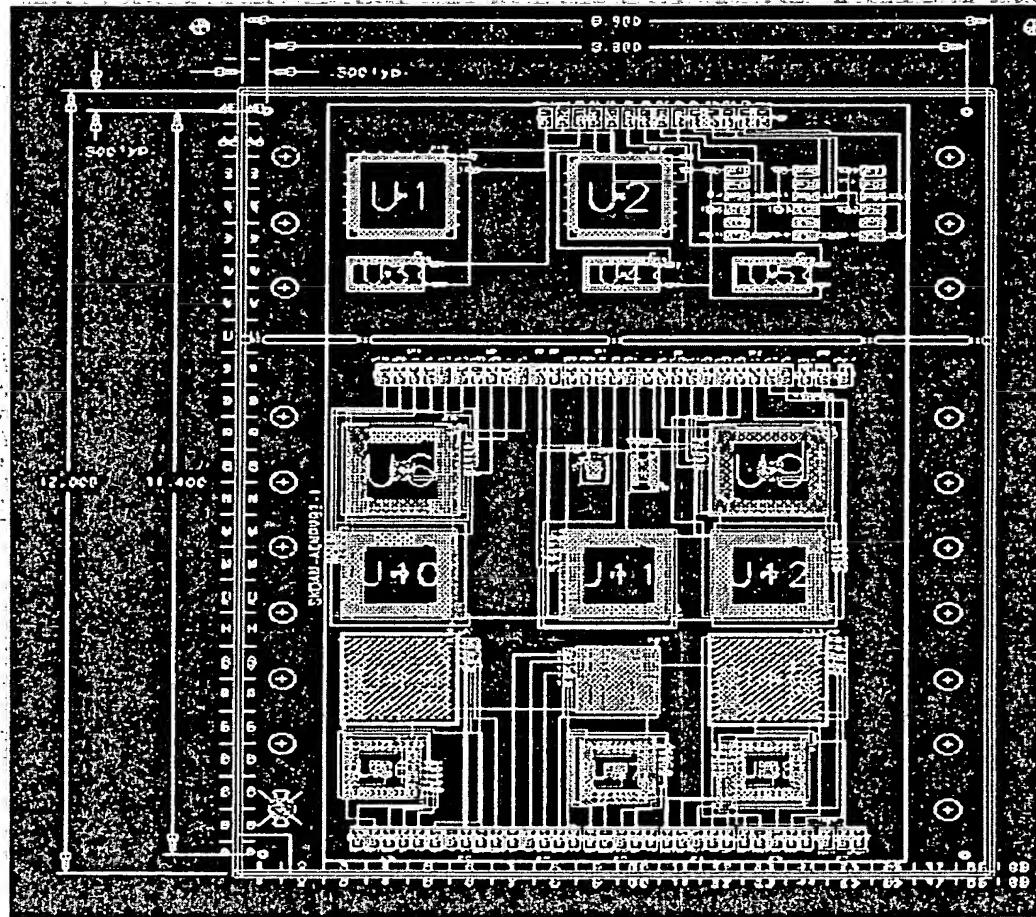
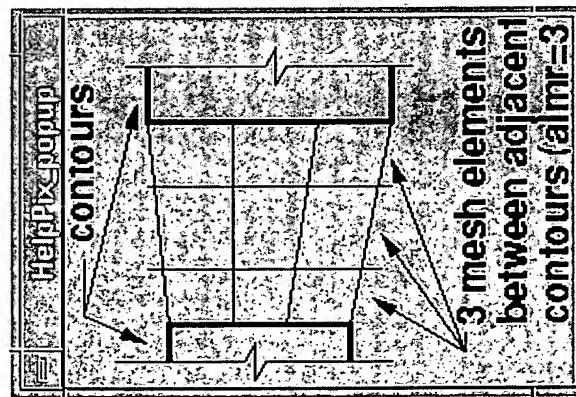
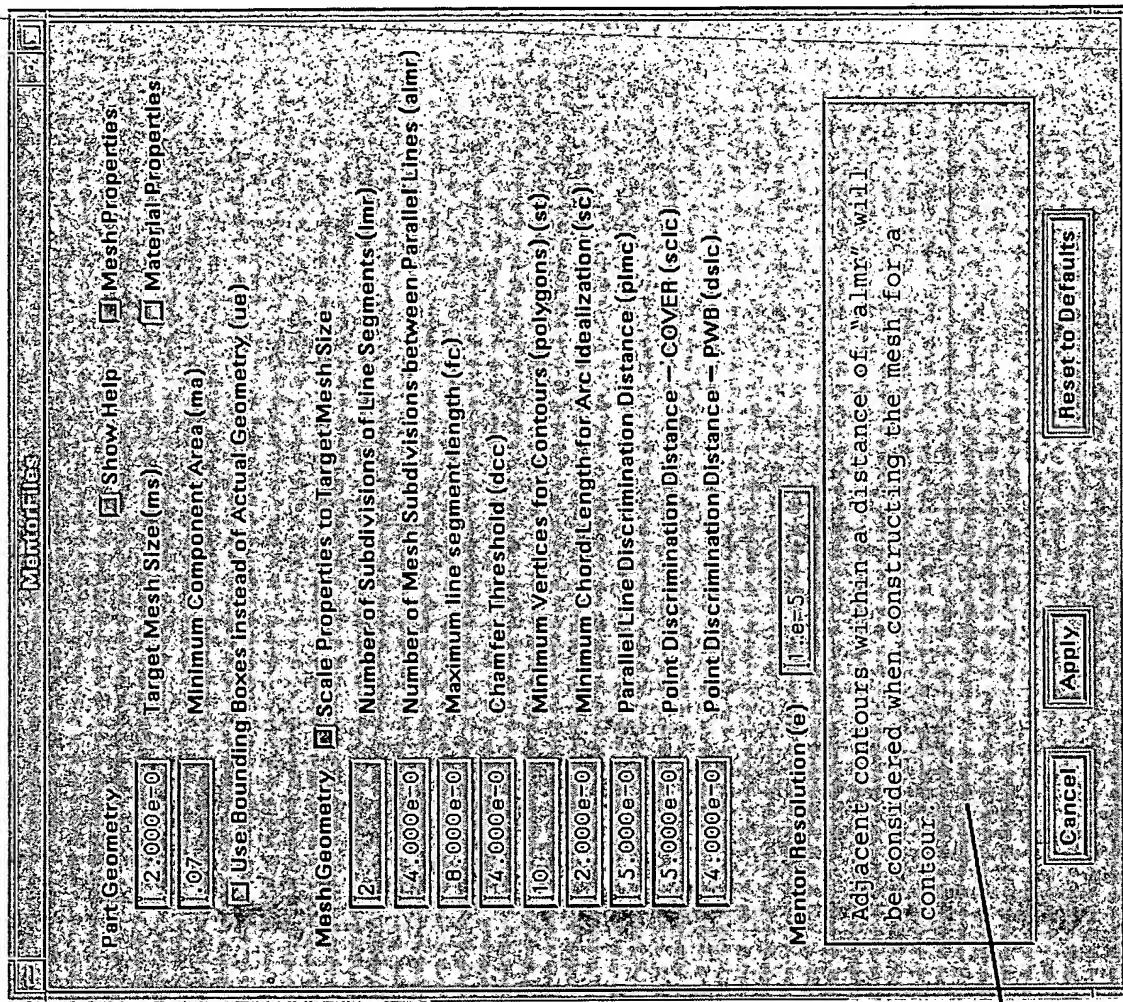


FIG. 2.

Figure 3



Help for selected field

FIG. 4.

Durability Module	Description	Configuration
CCC	Leadless chip component	
54 - DIO	Planar-diode package	
52 - IND	Inductor feedthrough foil	
58 - Hybrid-GW	Gull wing	
Hybrid-SGW	Spider gull wing	
56 - L-lead	L-leaded component	
J-lead	J-leaded component	
PTH	Plated-through-hole component	
59 - PBGA	Plastic ball grid arrays	

Durability Part Number Table						
Part Number	Package Name	Lead Style	Name	Lead Material Name	Lead Material ID	Lead Material Supplier
17290B-00K	3331 BGA Package	100m pitch	111-TSOP-4510x22mm	HYBRID002k	CU	CU
173332-00D	3331 BGA Package	208m pitch	111-TSOP-4510x22mm	HYBRID002k	CU	CU
173334-11J	3331 BGA Package	208m pitch	111-TSOP-4510x22mm	HYBRID002k	CU	CU
173446-00K	3888 BGA Package	100m pitch	111-TSOP-4510x22mm	HYBRID002k	CU	CU
280-10020-101	280-10025-101	280-10025-101	280-10025-101	280-10025-102	280-10025-102	280-10025-103
280-10025-102	280-10025-103	280-10025-103	280-10025-104	280-10025-104	280-10025-104	280-10025-104
17350U-00L	3331 BGA Package	100m pitch	111-TSOP-4510x22mm	HYBRID002k	CU	CU

BGAPackageTable						
Part Number	Package Name	Substrate Length	Substrate Width	Ball Pitch	Thru Hole Ball Pitch	Thru Hole Ball Pitch
177-BGA Package	U-312	0.512	0.512	144	U	U
1744-UBGA Package	U-312	0.512	0.512	144	U	U
313-BGA Package	1.380	1.380	1.380	169	0	0
313-BGA Package	1.380	1.380	1.380	625	0	1
324-BGA Package	0.906	0.906	0.906	324	6	6
352-BGA Package	1.378	1.378	1.378	352	0	0
360-CBGA Package	0.980	0.980	0.980	361	0	0
388-BCGA Package	1.378	1.378	1.378	388	6	6
Dummy BGA Package	0.512	0.512	0.512	144	12	12
173-pbga-225-025	1.180	1.180	1.180	225	0	0

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FIG. 5.

Durability Part Number Table									
Part Number	Lead Style Name	Lead Material Name	Lead Pitch	Package	Lead ID				
17308-00K	313BGA PACKAGE 100m	CU	1.27mm	HBRID000K					
17332-00P	313BGA PACKAGE 100m	CU	1.27mm	HBRID000P					
17334-14U	313BGA PACKAGE 100m	CU	1.27mm	HBRID0024U					
17300-00U	360 BGA Package								
17346-00K	388B BGA PACKAGE								
280-002-10	280-10020-10								
280-002-510	280-10025-10								
280-002-102	280-10025-102								
280-002-103	280-10025-103								
280-10025-104	280-10025-104								
280-10025-105	280-10025-105								
280-10025-106	280-10025-106								

Lead Geometry Table									
Lead Style Name	S1	S2	RHO	R1	R2	R3	R4	R5	R6
HYBRID001	0.000	0.030	0.000	0.000	0.030	0.000	0.030	0.000	0.015
HYBRID002	0.005	0.080	0.008	0.000	0.075	0.008	0.008	0.008	0.010
HYBRID002a	0.020	0.030	0.035	0.000	0.005	0.005	0.105	0.026	0.007
HYBRID002b	0.025	0.030	0.055	0.000	0.005	0.005	0.000	0.057	0.007
HYBRID002c	0.010	0.030	0.056	0.000	0.005	0.005	0.000	0.035	0.006
HYBRID002d	0.000	0.006	0.021	0.000	0.005	0.005	0.000	0.040	0.004
HYBRID002e	0.016	0.013	0.051	0.000	0.005	0.005	0.000	0.050	0.017
HYBRID002f	0.037	0.012	0.071	0.000	0.006	0.006	0.000	0.072	0.009
HYBRID002g	0.008	0.019	0.041	0.000	0.006	0.006	0.000	0.063	0.012
HYBRID002h	0.007	0.026	0.052	0.000	0.005	0.005	0.000	0.029	0.017
HYBRID002i	0.000	0.040	0.060	0.000	0.005	0.005	0.000	0.076	0.018
HYBRID002j	0.001	0.040	0.060	0.000	0.005	0.005	0.000	0.030	0.027
HYBRID002k	0.001	0.020	0.031	0.000	0.005	0.005	0.000	0.030	0.014
HYBRID003	0.030	0.040	0.120	0.000	0.020	0.020	0.000	0.050	0.030
HYBRID004	0.030	0.040	0.120	0.000	0.020	0.020	0.000	0.050	0.030
HYBRID005	0.030	0.040	0.120	0.000	0.020	0.020	0.000	0.060	0.040
HYBRID006	0.030	0.040	0.150	0.000	0.020	0.020	0.000	0.040	0.020
HYBRID007	0.030	0.060	0.140	0.000	0.020	0.020	0.000	0.050	0.030

FIG. 6.

Durability Part Number Table		Lead Style Name		Lead Material Name	
Part Number	Package Name	Lead Style	Pitch	Lead Material	Name
172908-00R	313 BGAT Package	100 mil	Pitch	CU	
1673332-00P	THT-SOD540X22mm	10X22mm	HYPID1022X	CU	
123334-14U	PGD 208 mil	208 mil	HYPID1024	CU	
TESTTURE		TESTTURE		TESTTURE	
1173446-00U	388 BGAT Package	100 mil	Pitch	CU	
1280-10020-101	280-10020-101	280-10020-101	280-10020-101	CU	
1280-10025-101	280-10025-101	280-10025-101	280-10025-101	CU	
1280-10025-102	280-10025-102	280-10025-102	280-10025-102	CU	
1280-10025-103	280-10025-103	280-10025-103	280-10025-103	CU	
1280-10025-104	280-10025-104	280-10025-104	280-10025-104	CU	
1280-10025-105	280-10025-105	280-10025-105	280-10025-105	CU	

Material Table									
Name	Exp Coef.	Density	Heat Capacity	Poisson's Ratio	Shear Mod.	Thermal Cond.	Young Mod.	Strength	Modulus
	U.UUU	U.UU	U.UUU	U.UUU	U.UUU	U.UUU	U.UUU	U.UUU	U.UUU
663SN37/PB	2.1E-000	8378.00	2.14E+000	0.370	1.280	51.000	3880.000	3.600	10.722
ABLFONDO81605	4.5E-000	3400.600	1.000E+000	0.350	1.300	2.900	31800.000	10.600	10.600
AL	2.1E-000	2712.00	1.90E+000	0.330	1.700	1.6100	55000.000	26.000	26.000
ALBENET	1.37E-000	2100.00	1.96E+000	0.40	1.100	296.000	161580.000	16.500	16.500
ALB POLY	1.37E-000	1806.00	1.54E+000	0.310	1.6920	2.40	3280.000	6.300	6.300
ALHONEY	2.1E-000	500.00	950.000	0.330	2.740	2.800	3880.000	40.000	40.000
ALURINA	7.100	3841.00	90.000	0.220	25.00	27.600	2450.000	11.310	11.310
AU	1.4200	19400.00	1.27.000	0.420	3.980	315.000	11900.000	8.500	8.500
AUSL	1.5900	14510.00	1.63.000	0.300	3.500	5.000	40000.000	5.300	5.300
BRAVE	2.1600	24.00	920.000	0.330	20.00	4.500	10000.000	2.460	2.460
BT LAMINATE	1.5000	143.00	1.35.000	0.300	1.330	0.310	3880.000	40.000	40.000
CERA	6.0000	3817.00	960.000	0.220	16.390	21.600	28450.000	40.000	40.000
CER B	9.0000	2800.00	800.000	0.300	16.390	0.900	22450.000	40.000	40.000
CER C	1.1500	2800.00	800.000	0.300	16.390	0.900	22450.000	40.000	40.000
CER R	6.5000	3841.00	960.000	0.220	25.600	27.600	22450.000	40.000	40.000
CER A	6.0000	3817.00	960.000	0.220	16.390	21.600	22450.000	40.000	40.000
CER B	9.0000	2800.00	800.000	0.300	16.390	0.900	22450.000	40.000	40.000
CER C	6.5000	3841.00	960.000	0.220	25.600	27.600	22450.000	40.000	40.000

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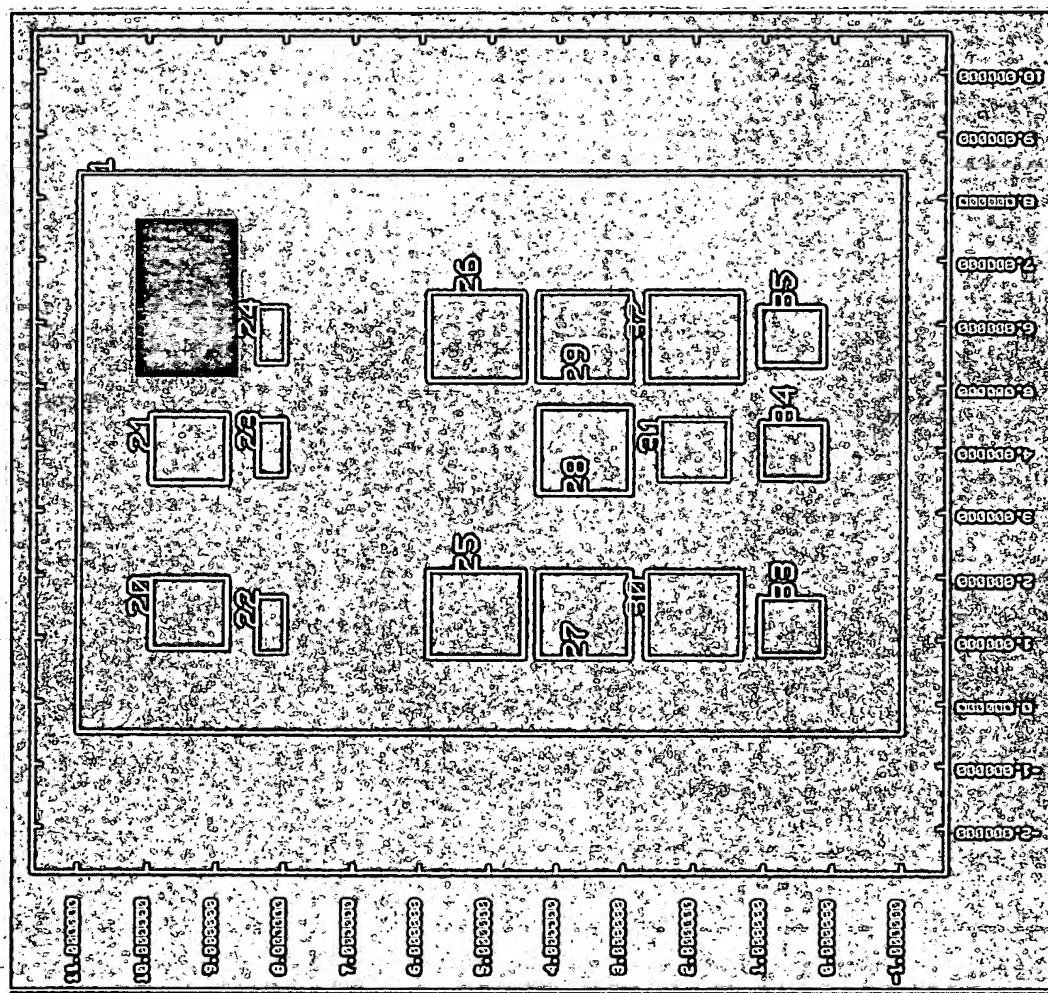
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Inventor(s): Mostafa Rassaian
Application No: To be assigned
Atty Dkt No: 38190/235695

FIG. 9.

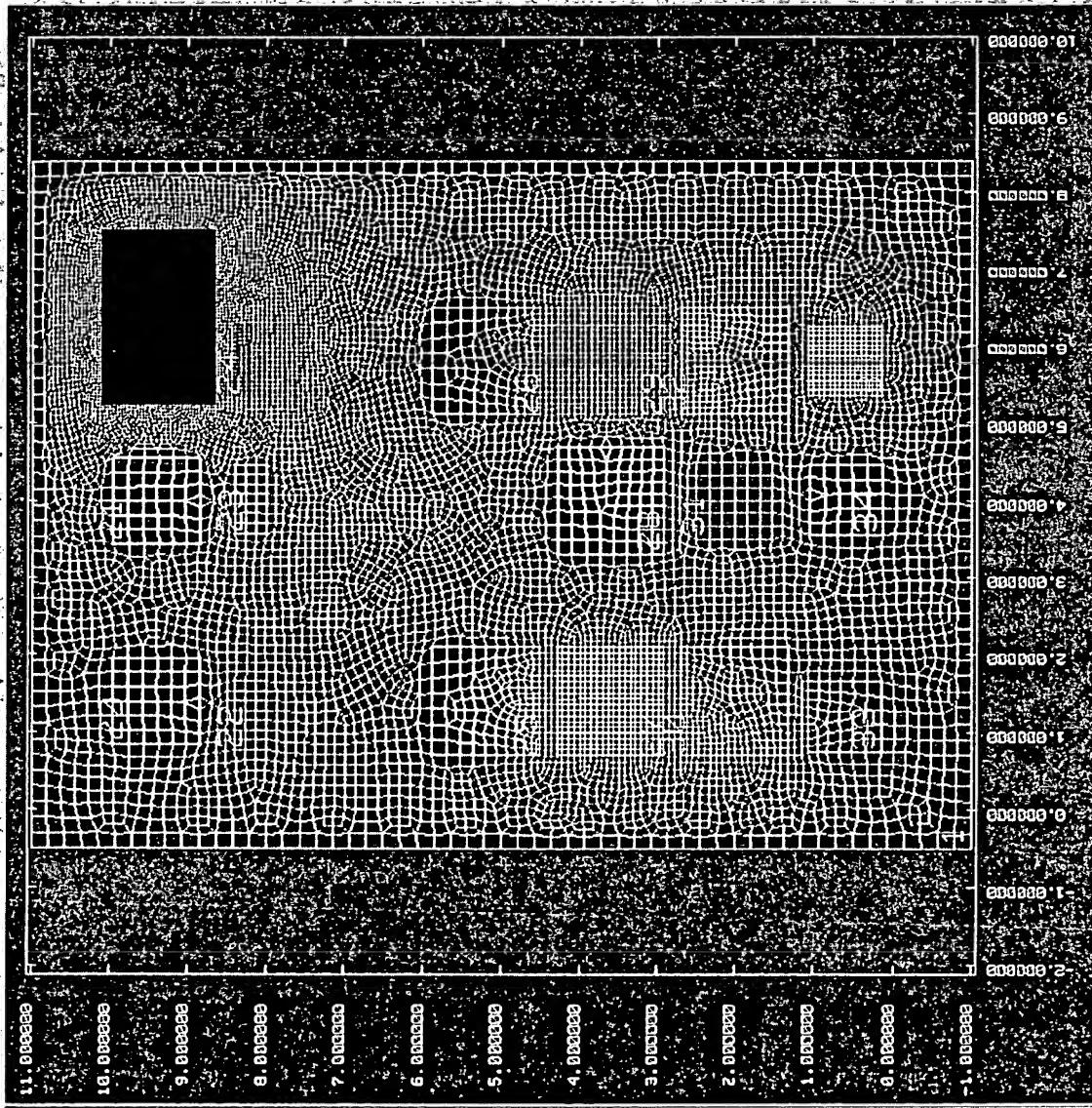


FIG. 10.

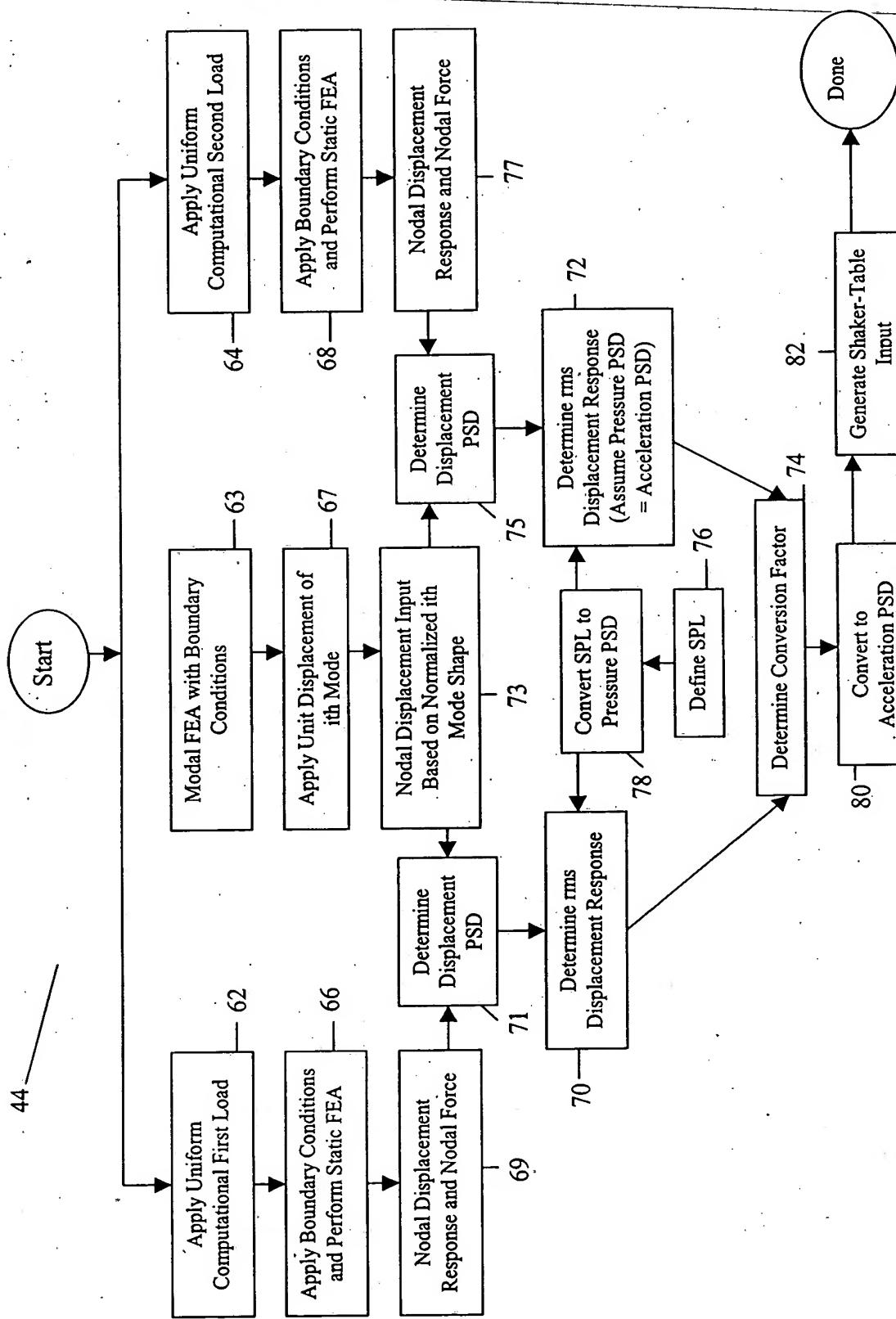


FIG. 11.

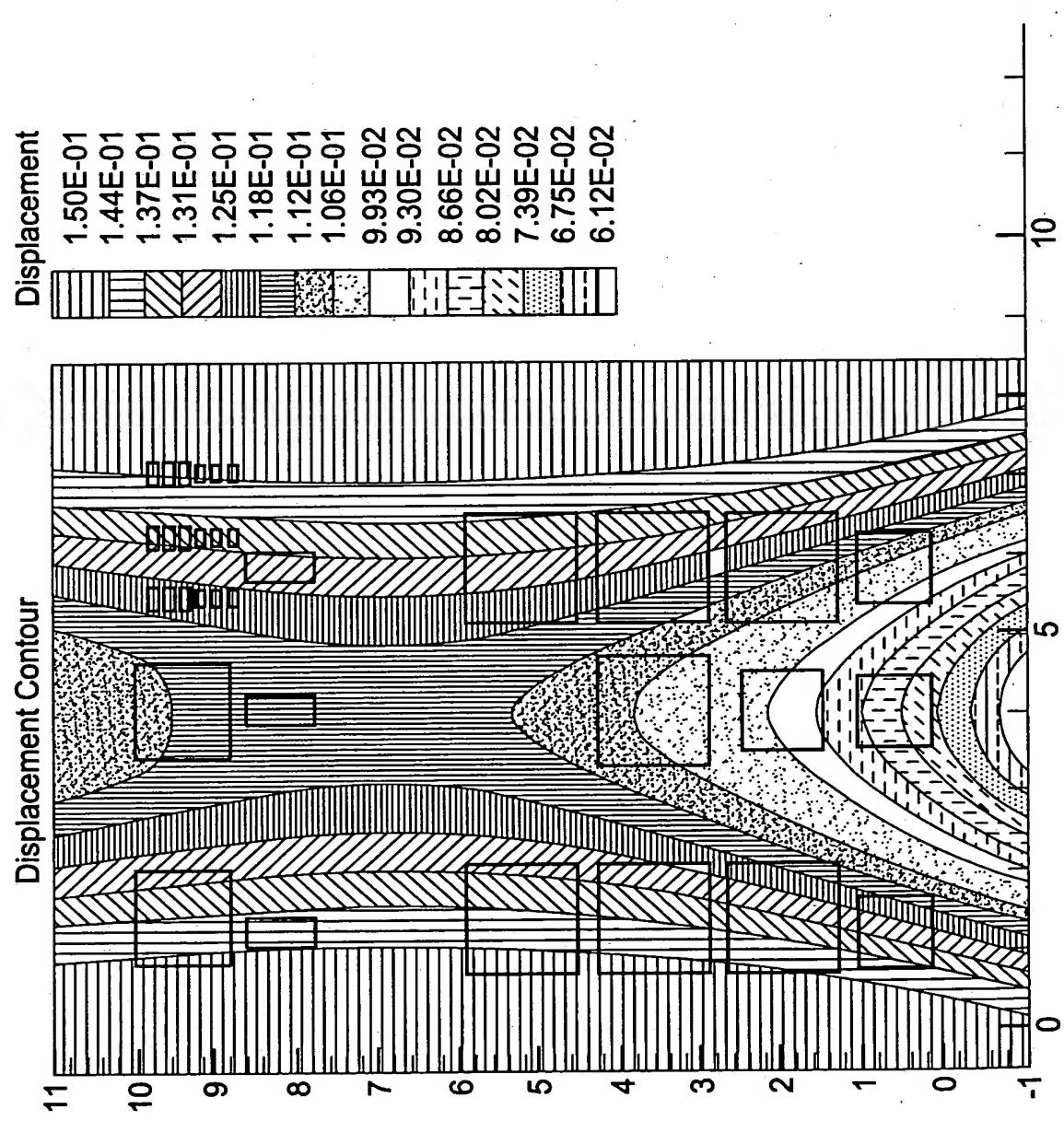
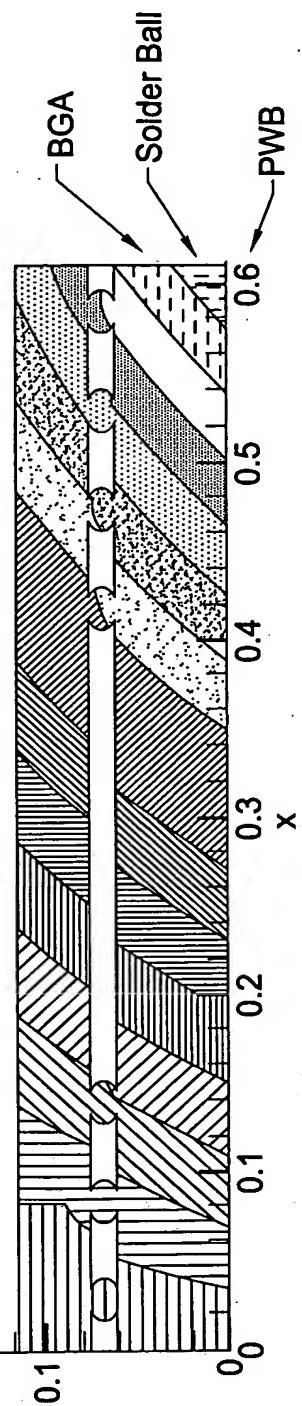
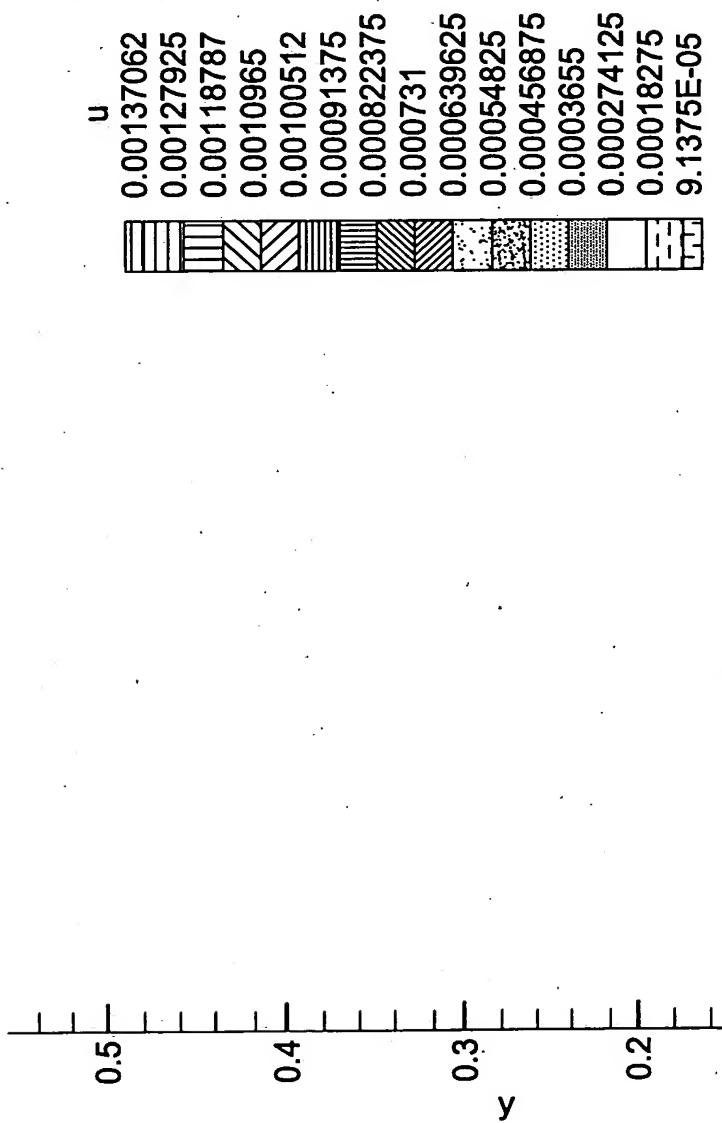


FIG. 12.

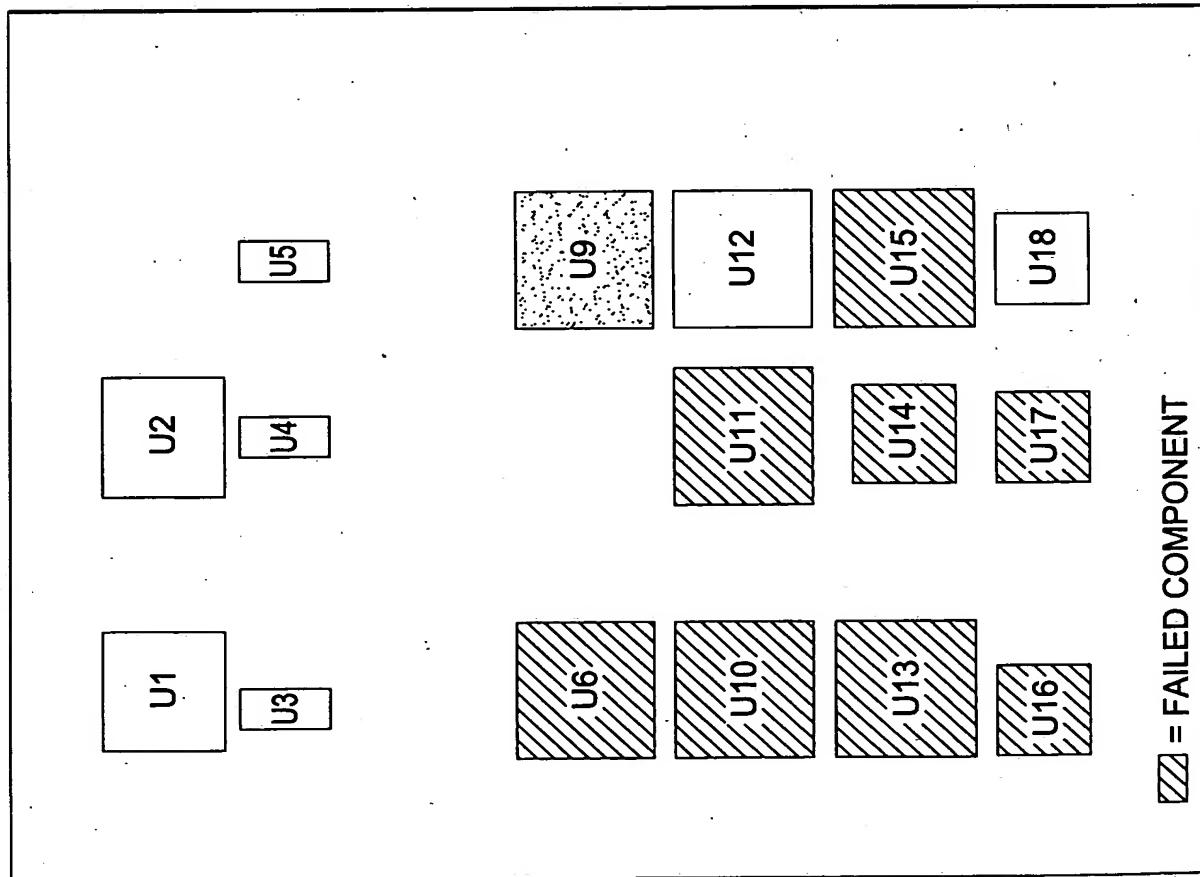


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FAILED COMPONENT PLOT

CDI

██████████	1.0 or greater
██████	.20 - .40
████	.00 - .10



████ = FAILED COMPONENT

FIG. 13.